

NAVY DEPARTMENT.
BUREAU OF ORDNANCE
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S74(20mm)
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April 7, 1943 1:06

BUREAU OF ORDNANCE CIRCULAR LETTER NO. G8-43

Subject: 20 mm. A.A. Gun - Muzzle Extension for
Use with Pipe Rail Limit Stops.

Reference: (a) BuOrd Sketch No. 111923.

1. Purpose. This Circular Letter is intended to acquaint the Service (especially Navy Yards) with the muzzle extension shown on reference (a), which may be used where such a device is needed in connection with pipe rail limit stops. In addition, this Circular Letter contains general instructions in regard to the use of train and elevation stops of all types.

2. Pipe rail limit stops, which are under the cognizance of the Bureau of Ships, are installed with 20 mm. A.A. guns in certain locations in certain ships, in order to prevent movement of a gun into areas where the ship's structure would be in the line of fire. In some cases this purpose is served adequately by fixed train stops (independent of the gun elevation angle) and by fixed elevation and depression stops (independent of the angle of train). In other cases, safe limits of train and elevation are not independent one from the other, and it is necessary to provide for a variable limiting angle of elevation or depression which depends upon the angle of train. Pipe rail limit stops are one method of accomplishing this objective.

3. Normally, with a pipe rail stop, the pipe is located so that it will engage the barrel of the gun. Sometimes such a position would interfere with the gunner or another member of the gun crew in operating or serving the gun on the approximate reverse bearing. The best way to avoid this interference is to move the pipe rail further away from the center of rotation of the mount, and to install a muzzle extension on the gun barrel, so that the extension will engage the pipe rail. The design shown by reference (a) is approved for use when a muzzle extension is required for this purpose.

4. Vandyke copies of reference (a) are being sent to all Navy Yards and to all Supervisors of Shipbuilding. These muzzle extensions should be manufactured by the activity making the pipe rail installation, as a charge against

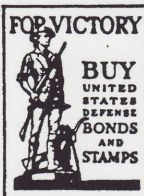


Exhibit 5-1.

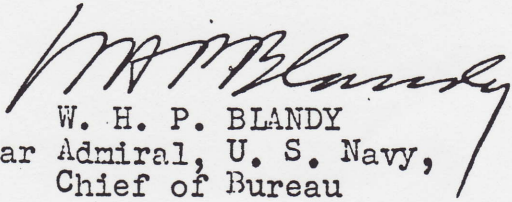
ordnance funds, or (in case no ordnance funds are available) the muzzle extensions should be obtained on requisition from the nearest Navy Yard.

5. Pipe rail limit stops for 20 mm. A.A. guns are a temporary expedient, pending the availability of a satisfactory cam type of limit stop. Several designs of cam type stops have been worked up, and a few experimental installations on shipboard have been made. Additional designs are being tested at the Naval Gun Factory. Thus far, no design has been tested that is satisfactory as a standard, for wide spread use. It is expected that one of the designs now under test will be approved in the near future. As soon as a satisfactory cam type limit stop has been tested and is approved, it is planned to issue an Ordalt which will authorize manufacture and installation of the cam type to replace pipe rail stops already installed and to be used instead of pipe rail stops with subsequent installations.

6. The policy of the Bureau of Ordnance in regard to train and elevation limit stops in general, whether of the pipe rail type or the cam type, and as applied to all gun mounts and turrets, regardless of caliber, is outlined as follows:

- (a) The function of these stops is to prevent movement of the gun into a position where its fire would endanger: (1) Any part of the fixed structure of the ship (such as a deck house); or (2) adjacent moveable equipment (such as a crane or a gun mount) with the latter in its position of least interference.
- (b) In considering interferences caused by other moveable equipment, it is obvious that valuable arcs of fire would be lost if the limit stops were set to exclude all possible interferences. Therefore, in general, a limit stop is intended to prevent an interference that can not be avoided otherwise. X
- (c) Limit stops are not intended to protect adjacent personnel from blast. An exception to this rule may exist if the adjacent personnel (a director crew, for example) are necessary for the service of the gun. Generally speaking, exposed persons will have to leave their stations if a near-by gun trains into a position where they would be injured by blast. X

- (d) The adjustment or machining of limit stops, which will determine the effective limiting angles, is the responsibility of the ship's force. As a general rule, a stop should be set so that with the gun in its limiting position, the axis of the bore of the gun will clear the interfering object by at least one caliber (for guns of 5" bore and larger), or by at least five inches (for guns smaller than 5").


W. H. P. BLANDY
Rear Admiral, U. S. Navy,
Chief of Bureau

STANDARD LIST (No. 8)

- 1 a-n, q-u, w, x, z-ff, ii-oo
- 2 a, d-j, l-p, t-v, bb
- 3 a-p, r-ss, uu-yy
- B3 200-299, 700-799, 1000, 1199, 1500, 1699, 1800-1999, 10000-10099
- 4 a-m, o, p, r-ss
- 5 b(Alusna London only)
- 7 a-c, f-m, o, u, x, y
- 8 b, j, k, n(Gunners Mates only), q-s, u, v, x, z
- 10 f-j, m, n
- 11a (USMC Hdqtrs only), BuShips, VOpNav, BuOrd
- 12 a
- 14 a, i-k, m, n, q, s

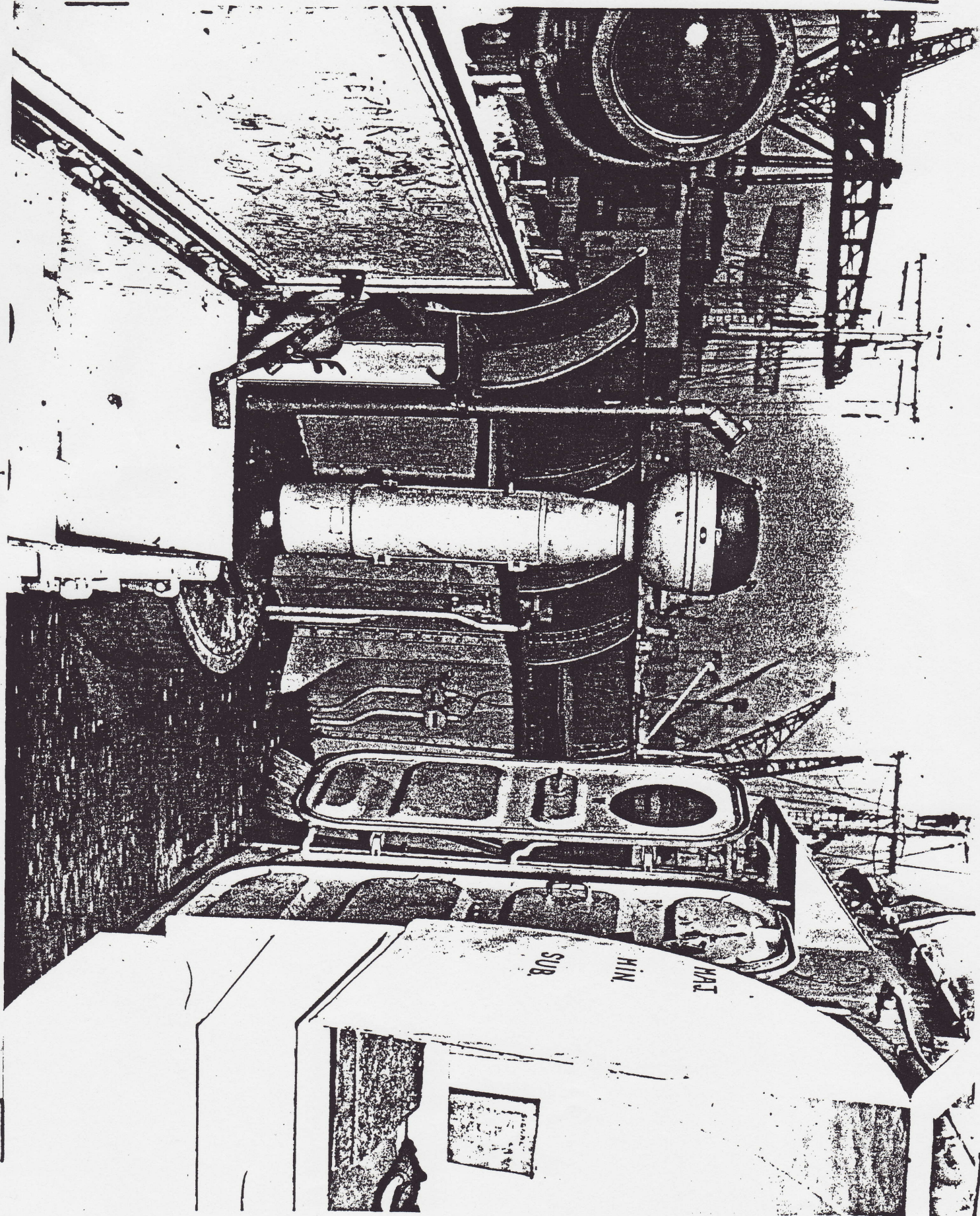


EXHIBIT 6

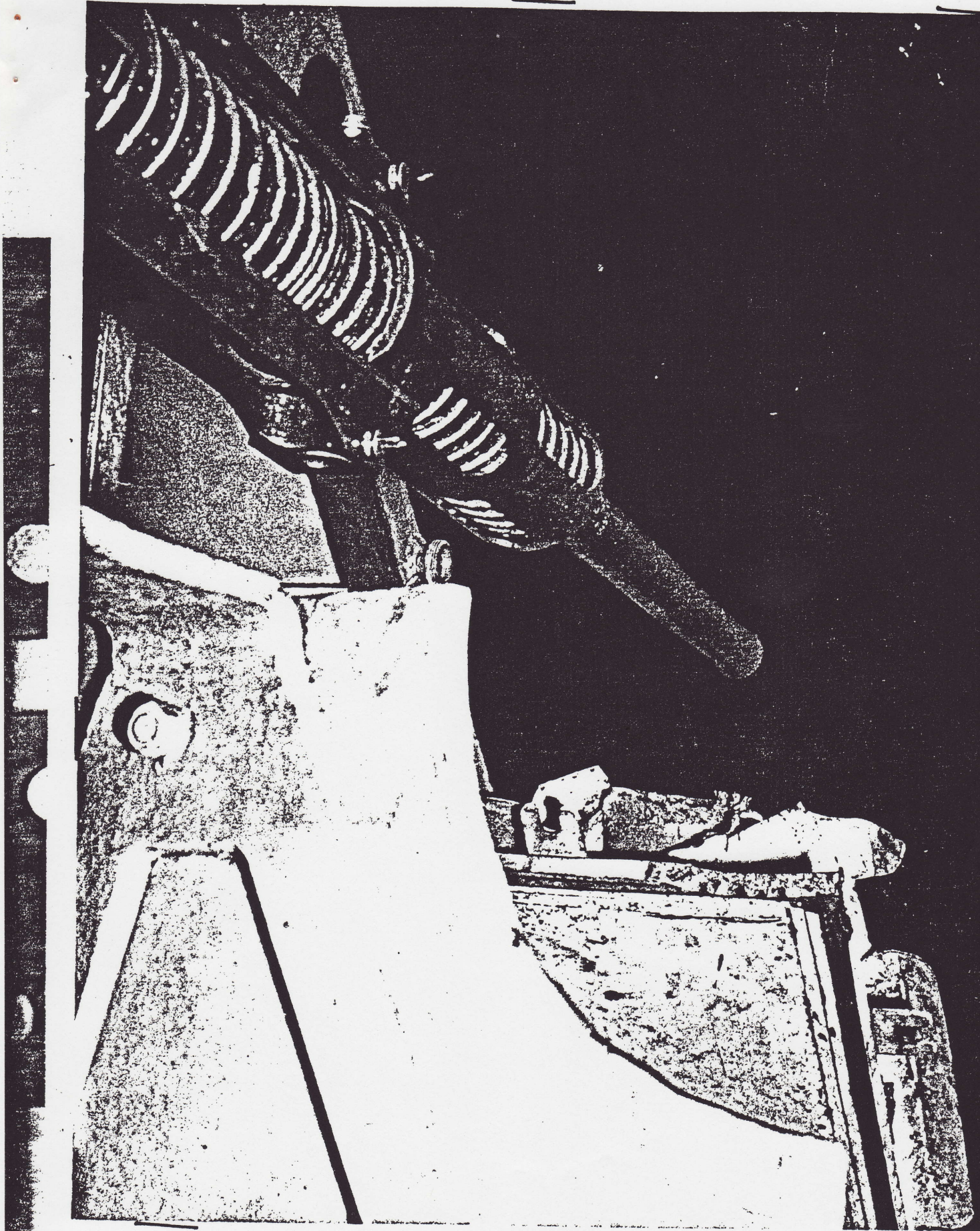
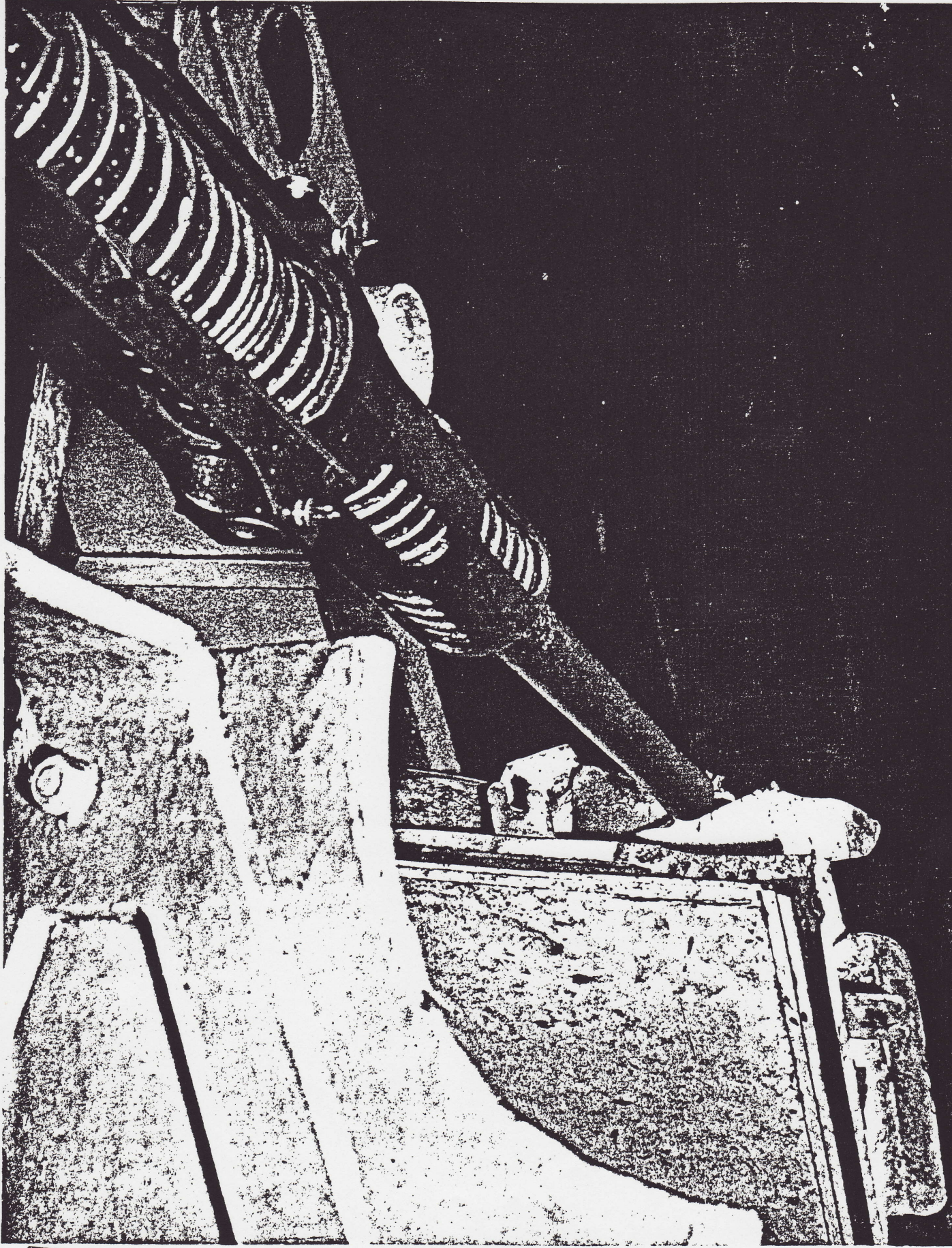


EXHIBIT 7



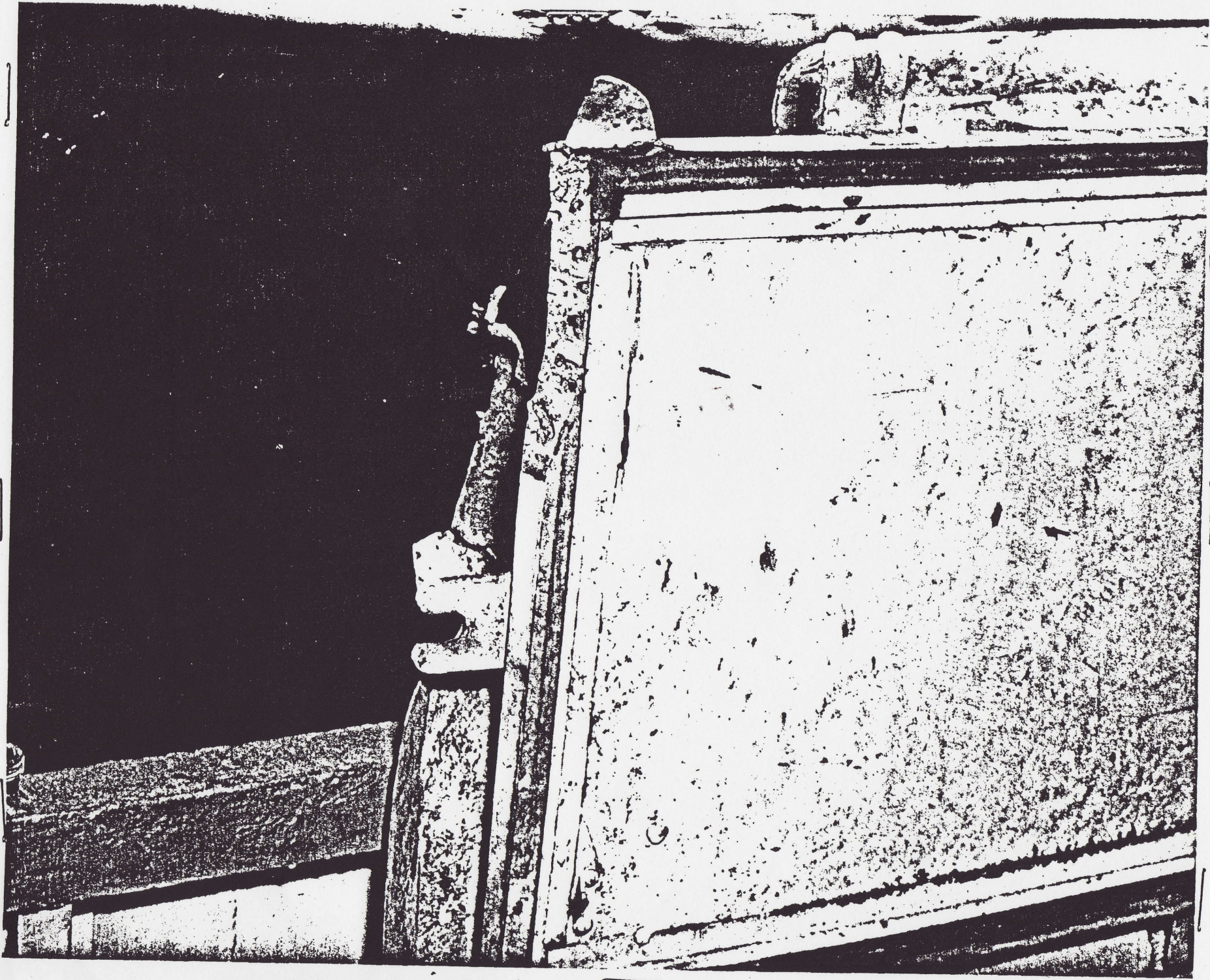


EXHIBIT 9

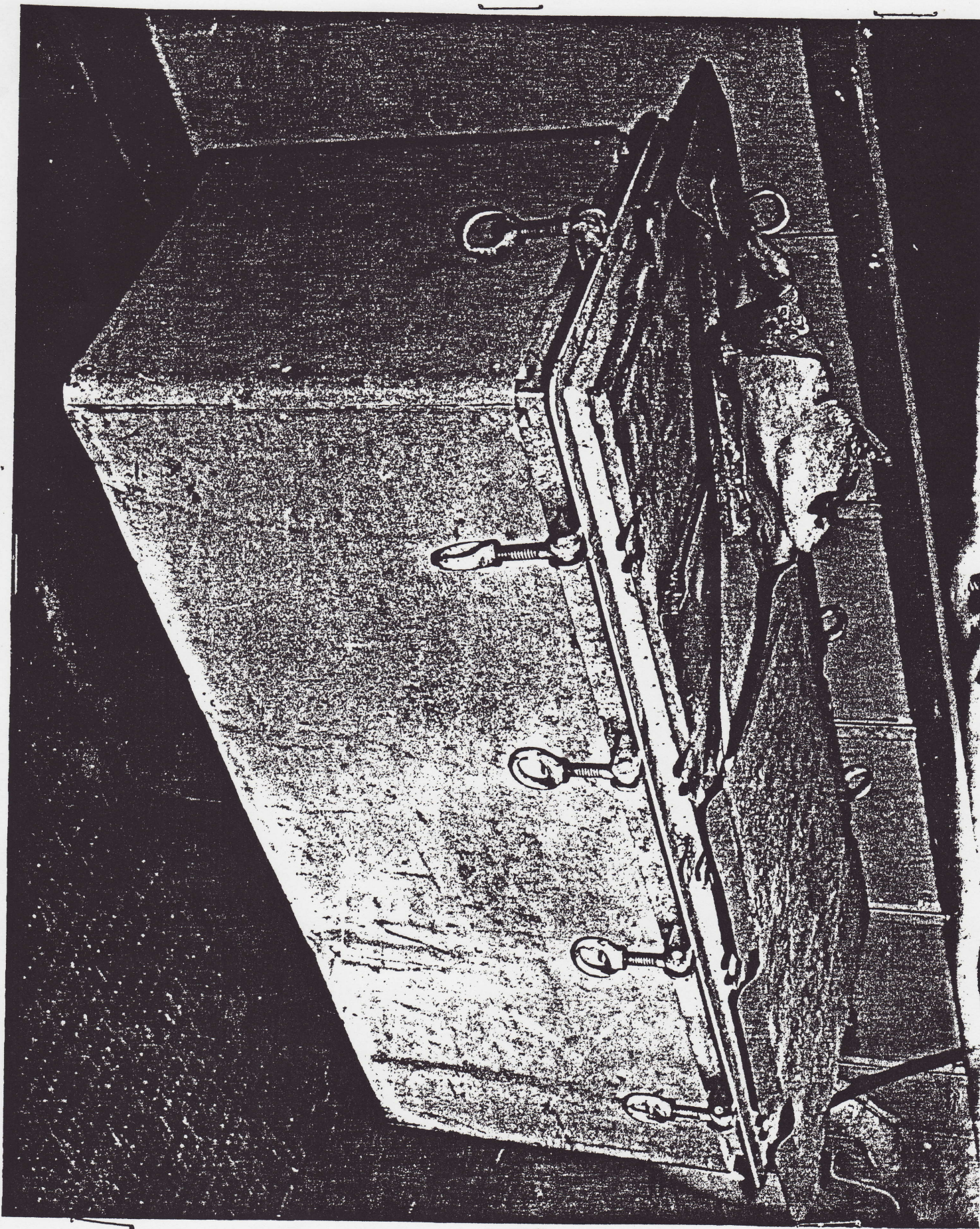


EXHIBIT 10

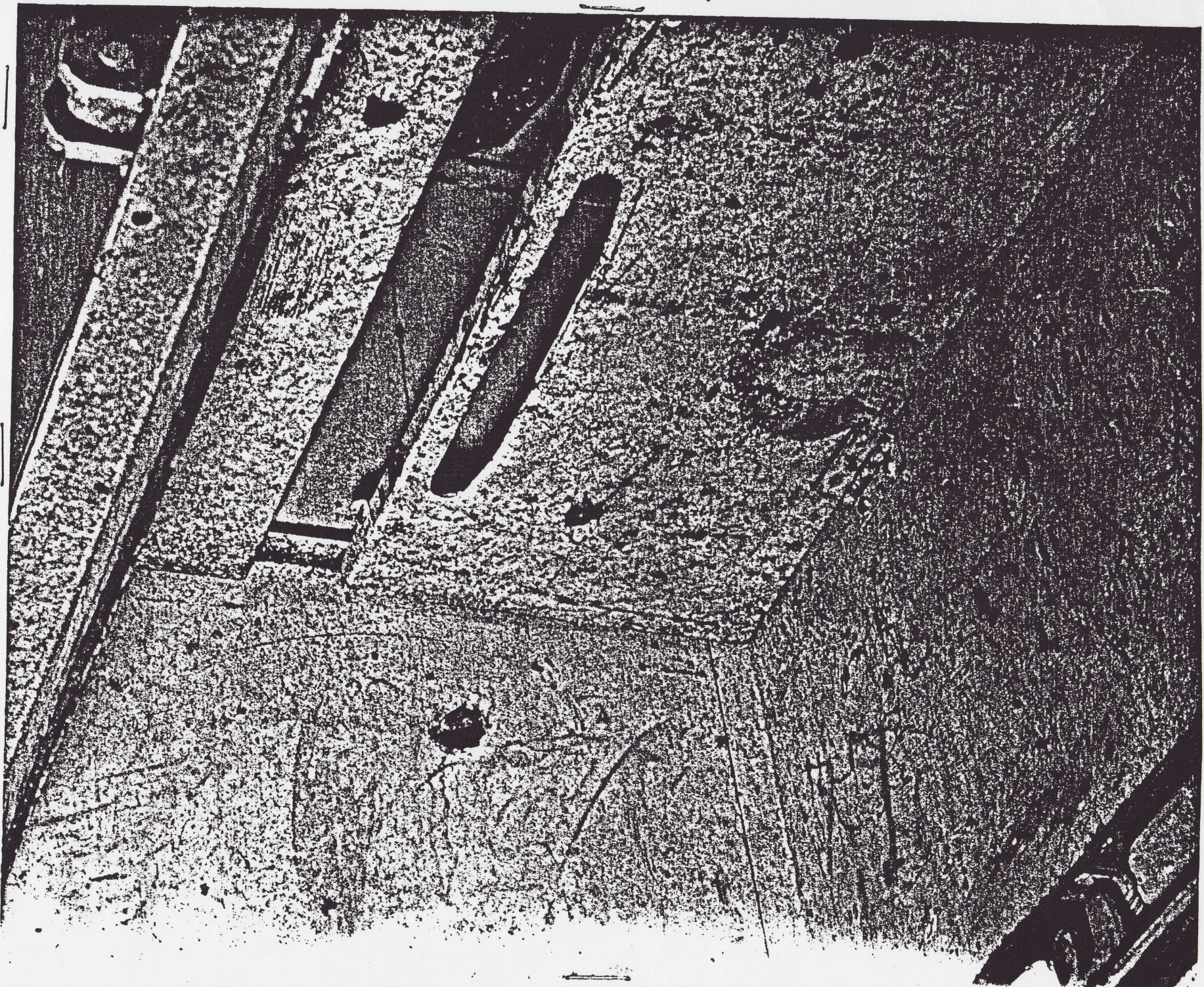


EXHIBIT 11

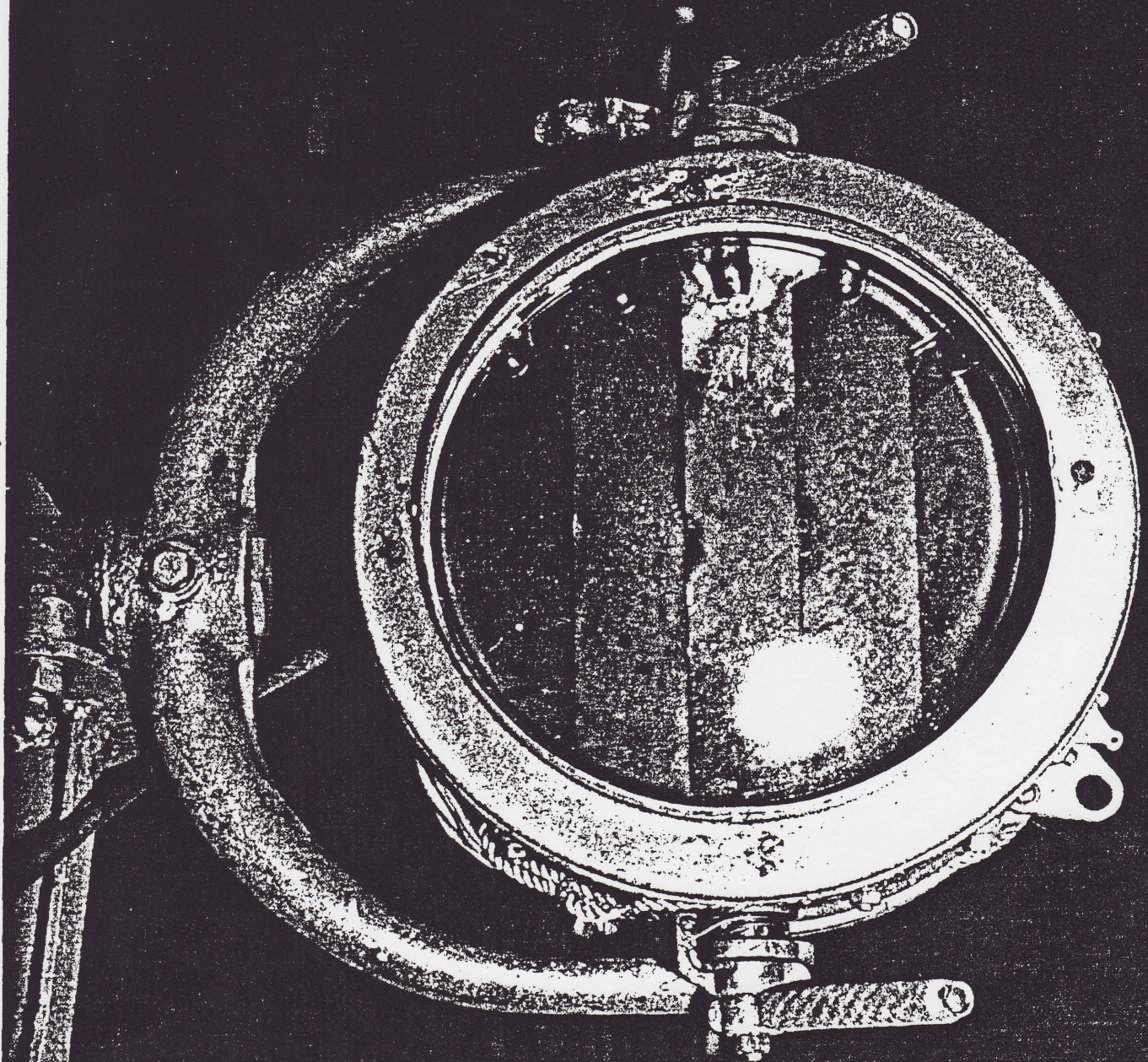


EXHIBIT 12

